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May 29, 2014

CONFIDENTIAL DIV. OF OIL, GAS & MINING

Ms. Dana Dean
Associate Director - Mining
Department of Natural Resources
Utah Division of Oil, Gas, and Mining
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84116

Reference: Archaeological Monitoring Summary and Supplemental Site Documentation for the Kane County Emergency Watershed Protection (EWP) Project Rock Quarry, Kane County, Utah (U-14-SH-0327p)

Dear Ms. Dean:

Enclosed is a cultural resources report titled *Archaeological Monitoring Summary and Supplemental Site Documentation for the Kane County Emergency Watershed Protection (EWP) Project Rock Quarry, Kane County, Utah*. Specifically, the Natural Resources Conservation Service (NRCS) provided financial assistance to Kane County to protect and repair public infrastructure at 10 work locations on the East Fork of the Virgin River near the communities of Glendale, Orderville, and Mount Carmel, Utah. However, the rock quarry for the project was placed in an area that had not been inventoried for cultural resources.

The NRCS cultural resources inventory of the unauthorized rock quarry resulted in the identification of a prehistoric cave site, 42KA7537, which the NRCS determined was eligible for the National Register of Historic Places (NRHP). It was also determined that the site had been adversely affected as a result of the unauthorized quarry. The adverse effect resulted from a road being cut through the site to access the top of the rock outcrop.

In accordance with 36 CFR Part 800.6, the NRCS in consultation with the Utah SHPO, the Kane County Commission, the landowner, and the Utah Division of Oil, Gas, and Mining (UDOGM), resolved the adverse effects to Site 42KA7537 through the development of a treatment plan detailing the measures used to mitigate the effects to the historic property. In the fall of 2013, a Memorandum of Agreement (MOA) was executed and implemented pursuant to compliance with Section 106 of the National Historic Preservation Act.

As detailed in the treatment plan, NRCS personnel completed supplemental documentation of Site 42KA7537 and monitored quarry reclamation activities within the boundaries of the site. In addition, site visits were conducted with the Kaibab Tribe before and after reclamation. No significant archaeological discoveries occurred during quarry reclamation. The enclosed report fulfills the mitigation stipulations described in the MOA and treatment plan. If you have any questions, comments, or concerns, please contact Tara S. Hoffmann, Cultural Resources Specialist, at 435-896-6441 ext. 124 at your earliest possible convenience.

Sincerely,

DAVID C. BROWN
State Conservationist

Enclosure

Ms. Dana Dean
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cc: (w/o encl)

Bronson Smart, State Conservation Engineer, NRCS, Salt Lake City, Utah

Elise Boeke, State Resource Conservationist, NRCS, Salt Lake City, Utah

Travis Thomason, Assistant State Conservationist-Field Operations, NRCS, Richfield, Utah

Andrew M. Williamson, Cultural Resources Specialist, NRCS, Salt Lake City, Utah

Natural Resources Conservation Service

**UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE, UTAH**

Summary Report of Cultural Resources Inventory

Project Name: Archaeological Monitoring Summary and Supplemental Site Documentation for the Kane County Emergency Watershed Protection (EWP) Project Rock Quarry, Kane County, Utah

Utah Division of State History (UDSH) Project Number: U-14-SH-0327p **UDSH Case No.** 13-0512

Report Date: April 10, 2014

Date(s) of Survey: November 14 and 18, 2013

Responsible Individuals

Principal Investigator:	Andrew M. Williamson
Field Supervisor:	Tara S. Hoffmann
Report Author(s):	Tara S. Hoffmann

Fieldwork Location:

County: Kane

USGS Maps: Glendale, Utah

Township: 40 South

Range: 06 West

Section(s): 35

Project Summary:

In the spring of 2011, the United States Department of Agriculture, Natural Resources Conservation Service (NRCS), was requested to provide technical and financial assistance to the Kane County, Utah Commission to protect and repair public infrastructure at 10 locations on the East Fork of the Virgin River near the communities of Glendale, Orderville, and Mount Carmel, Utah. Rock for the project would be sourced from a proposed location on private land near Kanab Creek. The initial rock quarry location was inventoried for cultural resources by NRCS State Cultural Resources Specialist (CRS) Andrew M. Williamson in March 2012 (Williamson 2012). However, when quarrying began in March 2013, it was discovered that the quarry was not located in the area that was inventoried by the NRCS in 2012. An inspection of the unauthorized rock quarry was completed by NRCS Area CRS Tara S. Hoffmann and Lee Woolsey of the NRCS on March 13, 2013 under authority of PLPCO Permit No. 54 (Andrew M. Williamson, RPA) and Utah State Antiquities Project No. U-13-SH-0167p (Hoffmann 2013). This resulted in the identification of a prehistoric cave site (42KA7537), which the NRCS determined was eligible for the National Register of Historic Places (NRHP). It was also determined that the site had been adversely affected as a result of the unauthorized quarry. The adverse effect resulted from a road being cut through the site to access the top of the rock outcrop.

In accordance with 36 CFR Part 800.6, the NRCS in consultation with the Utah SHPO, the Kane County Commission, the landowner, and the Utah Division of Oil, Gas, and Mining (UDOGM), resolved the adverse effects to Site 42KA7537 through the development of a treatment plan detailing the measures used to mitigate the effects to the historic property. In the fall of 2013, a Memorandum of Agreement (MOA) was executed and implemented pursuant to compliance with Section 106 of the National Historic Preservation Act.

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As detailed in the treatment plan, NRCS personnel completed supplemental documentation of Site 42KA7537 and monitored quarry reclamation activities within the boundaries of the site. In addition, site visits were conducted with the Kaibab Band of Paiute Indians before and after quarry reclamation.

Additional Documentation of Site 42KA7537

On November 14, 2013, NRCS Cultural Resources Specialists Andrew Williamson, Grant Smith, and Tara Hoffmann completed additional site documentation for Site 42KA7537 as outlined in the treatment plan and finalized in a MOA. This additional documentation consisted of an analysis of surface artifacts and representative profile mapping of the road cut bank at four locations.

Cut Bank Profiles

To document the stratigraphic profile of Site 42KA7537, four representative 1-meter long sections of the cut bank were mapped. Sections of the cut bank were cleaned up with a trowel to a near vertical profile. The profiles extended in depth below the lowest documented artifact. Few ceramics or lithics were documented within the cut bank profiles. Figures 1 through 4 illustrate the cut bank profiles, numbered from west to east along the cut bank.

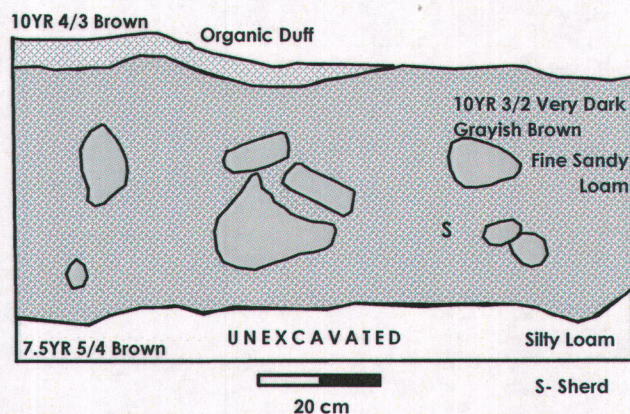


Figure 1. Profile 1, UTM 367233E 4127758N.

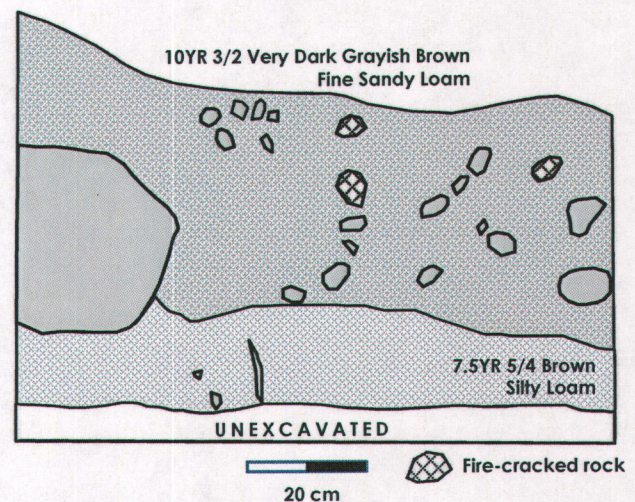


Figure 2. Profile 2, UTM 367233E 4127758N.

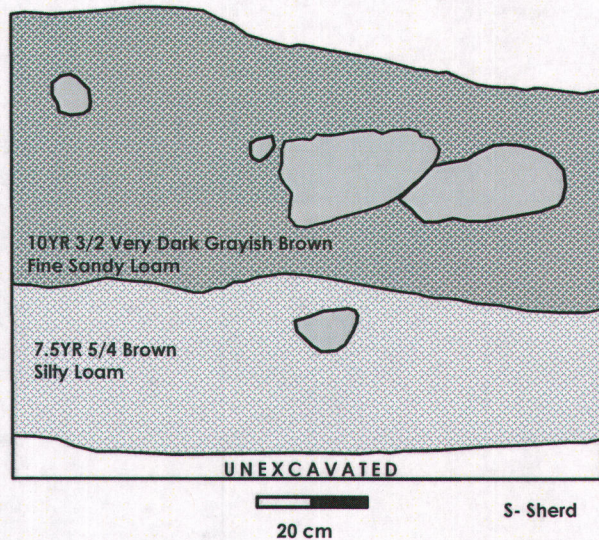


Figure 3. Profile , UTM 367241E 4127750N.

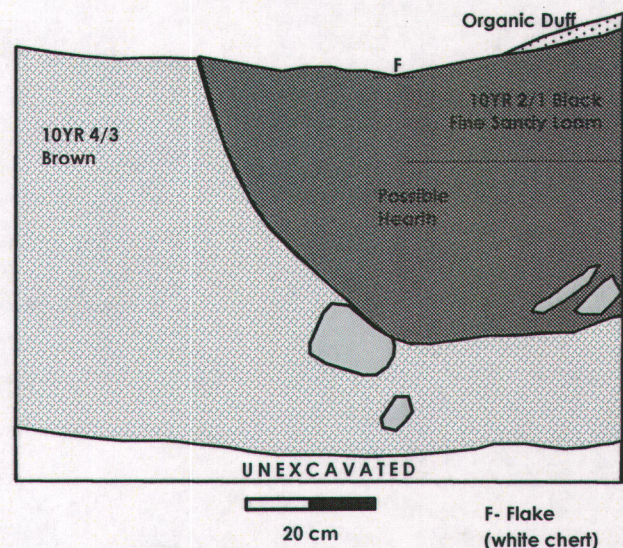


Figure 4. Profile 4 of hearth feature, F02. UTM 367250E 4127756N.

Lithic Analysis

Previously undocumented diagnostic lithics were documented with GPS coordinates, measurements, and photographed. A representative sample of surface lithics, documented by reduction stage, was also completed. Table 1 summarizes the diagnostic lithics recorded as well as a hearth feature. Documentation of surface lithics is summarized in Table 2.

Table 1. Description of diagnostic lithics and additional features at Site 42KA7537.

Site 42KA7537 Additional Lithic Artifact Locations & Descriptions				
Artifact/ Feature #	Temp ID	mE	mN	Description
P08	PA	367246	4127756	Tan quartzite biface midsection fragment that measures 35.73 mm long, 25.72 mm wide, and 8.01 mm thick. The biface exhibits percussion flake patterning and hinge fractures along the proximal and distal margins.
P09	PB	367246	4127756	Complete tan chert corner notch projectile point fragment that measures 22.10 mm long, 12.95 mm wide, and 3.64 mm thick. The artifact appears most closely related in form to Dolores Straight Stem projectile points (ca. 600-900 A.D.) as defined for the Southwestern United States (Justice 2002: 240-246).
P10	PC	367246	4127756	Opaque chert drill tip fragment that measures 13.30 mm long, 6.53 mm wide, and 3.23 mm thick. The artifact exhibits polish from use and a fractured distal margin.

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Site 42KA7537 Additional Lithic Artifact Locations & Descriptions					
Artifact/ Feature #	Temp ID	mE	mN	Description	
P11	PD	367244	4127756	Obsidian side notch projectile point base fragment that measures 18.45 mm long, 15.49 mm wide, and 4.34 mm thick. The fragment exhibits irregular flake patterning on all surfaces and is missing the tip as well as portions of the proximal and distal notch shoulders. The projectile point is too fragmented to be diagnostic.	
P12	PE	367240	4127754	Red chert biface end fragment that measures 18.45 mm long, 15.49 mm wide, and 4.34 mm thick. The fragment exhibits hammer percussion flake removal patterning and a hinge fracture along the distal margin. The biface is too fragmented to be diagnostic.	
P13	PF	367239	4127755	White chert corner notch projectile point base fragment that measures 12.16 mm long, 18.68 mm wide, and 3.05 mm thick. The tip and midsection elements are missing, and the artifact is too fragmented to be diagnostic.	
P14	PG	367240	4127756	Tan quartzite chopper or modified cobble that measures 12.89 mm long, 10.92 cm wide, and 5.45 cm thick. Flakes have been removed from one margin by way of hammer percussion to create a crude edge that does not exhibit any use wear patterning.	
P15	PH	367237	4127758	Tan sandstone metate fragment that measures 20.5 mm long, 18 cm wide, and approximately 4 cm thick. The metate exhibits undressed lateral margins and a pecked and polished dorsal surface.	
P16	PI	367236	4127754	Tan quartzite hammer stone fragment that measures 7.96 mm long, 7.59 cm wide, and 3.90 cm thick. The artifact exhibits edge batter patterning along one margin and is fractured across the opposite margin.	
P17	PJ	367236	4127757	Complete white chert graver that measures 16.67 mm long, 15.72 mm wide, and 3.99 mm thick. The artifact exhibits a finely-pointed working end that has evidence of polish from use.	
P18	PK	367233	4127758	Red sandstone groundstone fragment that measures 9.97 cm long, 5.67 cm wide, and 2.59 cm thick. The artifact exhibits polish along one margin, but is too fragmented to indicate use as a mano or a portion of a metate.	
P19	PL	367235	4127755	Complete red chert projectile point that measures 25.72 mm long, 11.67 mm wide, and 4.53 mm thick. The artifact appears most closely related in form to Dolores Straight Stem projectile points (ca. 600-900 A.D.) as defined for the Southwestern United States (Justice 2002: 240-246).	

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Site 42KA7537 Additional Lithic Artifact Locations & Descriptions				
Artifact/ Feature #	Temp ID	mE	mN	Description
P20	PM	367243	4127754	Grey-tan chert biface end fragment that measures 40.12 mm long, 22.56 mm wide, and 7.48 mm thick. The artifact exhibits percussion flake removal across all surfaces and a hing fracture along the distal margin. The artifact is too fragmented to be diagnostic.
F02	HEARTH	367247	4127758	The hearth feature observed at this site measures approximately 70 cm wide and 5 cm deep below the duff horizon. Ash staining is visible to a greater extent below the hearth feature but may be so as a result of bank erosion. The stain is highly visible in the profile and exhibits charcoal flecks, FCR fragments, and small lithic debris fragments among its contents.

Table 2. Representative surface sample of lithics at Site 42KA7537.

Site 42KA7537 Lithic Sampling Data			
Brown Quartzite		Red Chert	
Primary	0	Primary	0
Secondary	1	Secondary	1
Tertiary	0	Tertiary	0
Shatter	1	Shatter	2
Tan Quartzite		Obsidian	
Primary	1	Primary	0
Secondary	1	Secondary	0
Tertiary	1	Tertiary	1
Shatter	0	Shatter	0
Mottled Orange, Tan, & Brown Chert		Opaque Chert	
Primary	3	Primary	0
Secondary	5	Secondary	2
Tertiary	2	Tertiary	1
Shatter	3	Shatter	1
Grey Chert		Tan Chert	
Primary	1	Primary	0
Secondary	8	Secondary	4
Tertiary	1	Tertiary	2
Shatter	2	Shatter	1
Mottled Orange, Tan, & Brown Chert Cores: 6			

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Ceramics Analysis

The ceramic assemblage at Site 42KA7537 consists of Virgin Series Anasazi ceramic types that include North Creek Gray Ware (52 %), North Creek Corrugated Gray (14 %), unpainted Virgin Series White Ware (18 %), painted Virgin Series White Ware (8 %), St. George Black-on-Gray (5 %), and Shinarump Red Ware (3 %) (Table 3). The identified types suggest Anasazi occupation during Late Pueblo II-Early Pueblo III times or A.D. 1050-1250 (Lyneis 1999).

The ceramics are somewhat densely scattered throughout the site area but are generally more concentrated near the mouth of the cave. The specimens identified in Table 3 are from a random sample of 65 sherds, however, the estimated total ceramic assemblage likely consists of 200 to 300 sherds. In general, the assemblage is highly fragmented with most sherds being smaller than 2 cm in diameter. This inhibited the ability to make firm ceramic type identifications especially with the painted wares where the design elements were too small to characterize.

Table 3. Ceramic types identified at Site 42KA7537.

Ceramic Type	Count	Percent of total
St. George Black-on-Gray (Early PII Anasazi, A.D. 1000-1050). ¹	3	5
Virgin Series White Ware-painted	5	8
Virgin Series White Ware-unpainted	12	18
Shinarump Red Ware (Late PII-?, A.D. 1050-?). ¹	2	3
North Creek Corrugated Gray (Late PII-Early PIII Anasazi, A.D. 1050-1250). ¹	9	14
North Creek Gray Ware	34	52
Total	65	100

1. From "A Guide to Virgin Ceramics: Ceramic Workshop Jennifer Jack-Dixie Chapter Utah Statewide Archaeological Society" (Lyneis 1999)

Of all the sampled sherds, the temper was quartz, and in some cases very fine. Many sherds were noted to have a hard, vitreous paste that almost resembled the texture of peanut brittle.

St. George Black-on-Gray: These sherds were identified largely on the basis of line thickness being greater than 5 mm. The sherds were well finished with a quartz temper (probably quartz sand). The age range for St. George Black-on-Gray is A.D. 1000-1050 (Lyneis 1999).

Virgin Series White Ware (painted and unpainted): Together the painted and unpainted Virgin Series White Ware sherds included 17 individual specimens or 26-percent of sampled sherds. All were relatively well finished with smooth or polished surfaces. The temper was coarse-to-fine quartz. Five sherds contained thin black lines (less than 5 mm); however too little of the design was visible to confidently place the sherds into a named type category. They are, however, likely from Pueblo II-or- later vessels. The remaining white ware sherds were well finished but lack painted designs.

Shinarump Red Ware: Two Shinarump red ware sherds were identified. They are relatively well finished and contain quartz temper. The color may be described as a dark, reddish purple. The sherds have a hard, brittle, vitrified appearance. No paint was noted on either specimen.

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North Creek Corrugated Gray: Nine corrugated gray sherds were identified. All specimens have quartz temper. The age range for Virgin Series corrugated pottery is Late Pueblo II-Early Pueblo III Anasazi or A.D. 1050-1250 (Lyneis 1999).

North Creek Gray Ware: Thirty-four specimens or 52-percent of the sampled sherds are North Creek Gray Ware. Sherds in this category have a wide range of color and surface texture variation. Colors fall within the light-to-dark gray and brown ranges. Surface texture varied widely with course-to-smooth surfaces being identified. The sherds were identified as North Creek Gray Ware if they lacked a highly polished or glossy surface texture. All sherds are tempered with quartz. The specimens are believed to be from utilitarian vessels such as jars and ollas.

Construction Monitoring

On November 18, 2013, NRCS Area Cultural Resources Specialist Tara Hoffmann monitored the reclamation of the rock quarry within the boundaries of Site 42KA7537 (Figures 5 to 8).

The reclamation crew, consisting of a bulldozer and trackhoe arrived on site at 11:00am. The two machine operators were given a brief overview of the chain of events up to that point and shown the areas that

needed to be avoided during reclamation of the quarry within the site boundary. They were also informed that monitoring would occur during reclamation of the quarry within the boundary of Site 42KA7537. The bulldozer began working in the flat area below to slope to reclaim the staging areas. The trackhoe began on top of the slope, pushing fallen trees over the edge to be used as erosion control on the bank of Kanab Creek. Once the trackhoe had completed reclaiming the top of the slope, it followed the existing road cut down slope through Site 42KA7537.



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During monitoring, when the trackhoe was within the boundaries of Site 42KA7537, the machine operator worked slowly downslope, bringing disturbed soil up to the edge of the geotechnical fabric that had been placed along the cut bank of the site. In addition, the trackhoe operator used the toe to grab large boulders and fallen trees from within the disturbed area and placed them across the top of the slope to keep cattle from accessing the top of the slope. The operator was very exact and little soil overtopped the geotechnical fabric onto the site. At most, 6 inches of additional soil was deposited on the site boundary. As he proceeded down the slope, he placed large boulders within the reclaimed area to control erosion and return the area to a more natural appearance. Reclamation within the boundaries of the site was completed by 3:00pm (Figure 8).

Reclamation activities remained in areas of disturbance and did not exceed the depth of existing disturbance. Thus, no unanticipated significant archaeological materials occurred during reclamation activities.



Figure 8. Complete reclamation of unauthorized quarry road within the boundaries of Site 42KA7537. Cave feature within the site is located behind juniper tree in upper right of photograph. Facing west.

Management Summary:

This monitoring report fulfills the mitigation of archaeological resources, construction monitoring, and reporting stipulations described in Parts II and III of the MOA. A copy of this report and updated IMACS Site Form will be submitted to the Utah SHPO, the Kane County Commission, the landowner, and UDOGM.

Natural Resources Conservation Service

References

Hoffmann, Tara S.

2013 *Cultural Resources Inventory of the Kane County Emergency Watershed Protection (EWP) Project Rock Quarry Location on Kanab Creek, Kane County, Utah*. Utah Antiquities Project Number U-13-SH-0167p. Document on file at the Utah State Historic Preservation Office, Salt Lake City, and at the Natural Resources Conservation Service Utah State Office, Salt Lake City.

Justice, Noel D.

2002 *Stone Age Spear and Arrow Points of the Southwestern United States*. Indiana University Press, Bloomington.

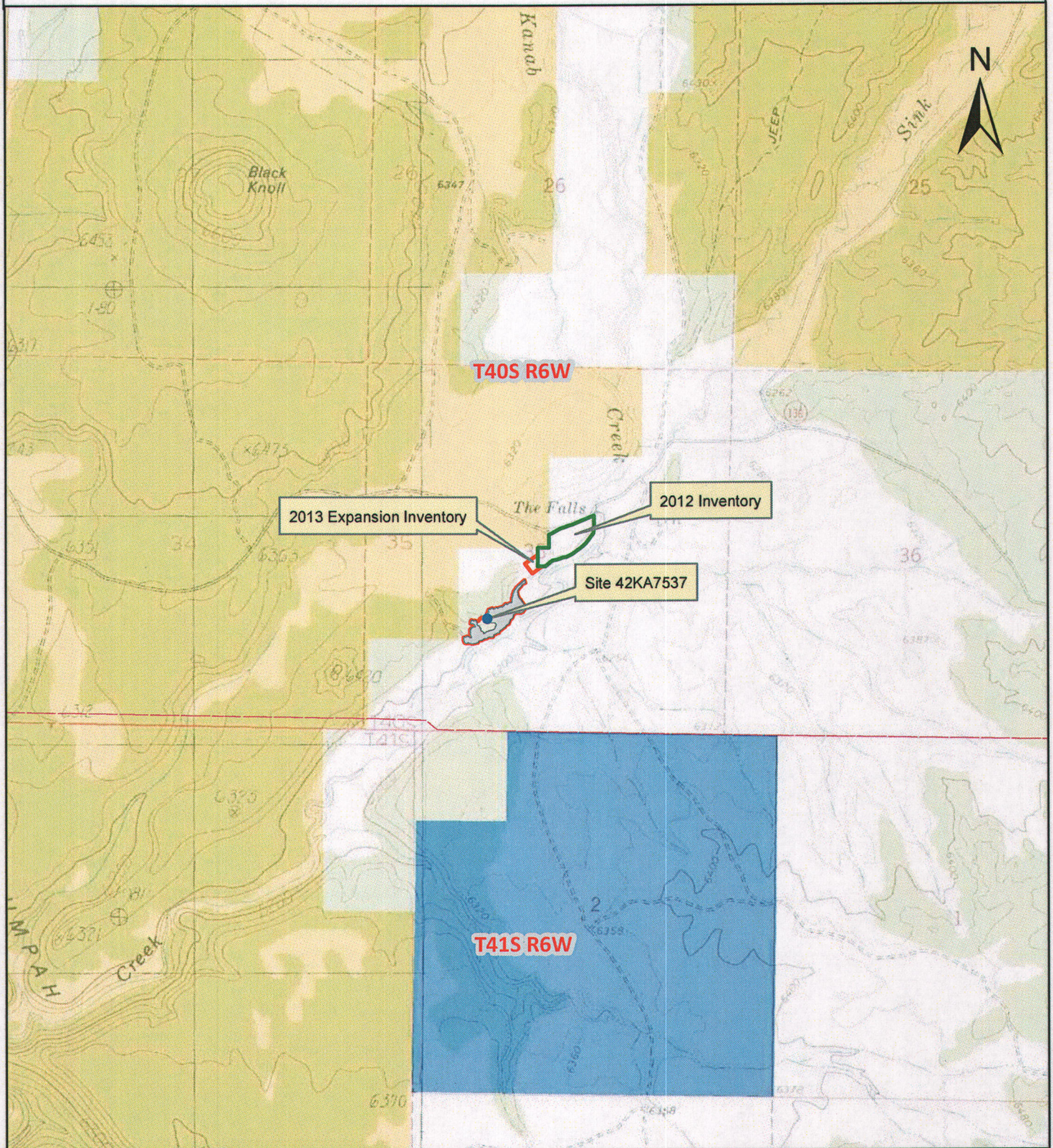
Lyneis, Margaret M.

1999 *A Guide to Virgin Ceramics*. Paper presented at Ceramics Workshop Jennifer Jack-Dixie Chapter Utah Statewide Archaeological Society. Fredonia, Arizona.

Williamson, Andrew M.

2012 *Cultural Resources Inventory for the Kane County Emergency Watershed Protection (EWP) Project, Kane County, Utah*. Utah Antiquities Project No. U-12-SH-0189ps. Document on file at the Division of State History, Utah State Historic Preservation Office, Salt Lake City, Utah.

Location of Archaeological Monitoring and Supplemental Site Documentation of 42KA7537 for the Kane County Emergency Watershed Protection (EWP) Project Rock Quarry, Kane County, Utah (U-14-SH-0327p)



Legend

- | | | | |
|--|-----------------------------------|--|---------------------------|
| | 2013 Quarry Disturbance | | Bureau of Land Management |
| | 2013 Cultural Resources Inventory | | Private |
| | 2012 Cultural Resources Inventory | | State |
| | Archaeological Site | | |

250 0 250 500 750 1,000 Meters

1:24,000



Basemap taken from the Glendale, Utah USGS 7.5 Minute Series topographic quadrangle
Map produced on April 17, 2014

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